Comparison of key skills specifications 2000/2002 with 2004 standardsX015461July 2004Issue 1

edxLogo_RGB

Mark Scheme (Results)

November 2011

Applications of Mathematics (GCSE)

Unit 2: 5AM2F\_01

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel’s centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our **Ask The Expert** email service helpful.

Ask The Expert can be accessed online at the following link:

http://www.edexcel.com/Aboutus/contact-us/

November 2011

All the material in this publication is copyright  
© Pearson Education Ltd 2011

**NOTES ON MARKING PRINCIPLES**

**1** All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

**2** Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

**3** All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate’s response is not worthy of credit according to the mark scheme.

**4** Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

**5** Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

**6** Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*

Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select* *and use a form and style of writing appropriate to purpose and to complex subject matter*

Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.

The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

**7** **With working**

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the “correct” answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

**8** **Follow through marks**

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

**9** **Ignoring subsequent work**

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

**10** **Probability**

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

**11** **Linear equations**

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

**12 Parts of questions**

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

**13 Range of answers**

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

|  |
| --- |
| **Guidance on the use of codes within this mark scheme** |
| M1 – method mark  A1 – accuracy mark  B1 – Working mark  C1 – communication mark  QWC – quality of written communication  oe – or equivalent  cao – correct answer only  ft – follow through  sc – special case  dep – dependent (on a previous mark or conclusion)  indep – independent  isw – ignore subsequent working |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **5AM2F\_01** | | | | | |
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| 1 | (a) |  | 400 or 4 hundred | 1 | B1 |
|  | (b) |  | 6 hundredths or | 1 | B1  (SC B1 accept 60g) |
|  | (c) | 5.46 – 5  Or 5460 – 5000 |  | 2 | M1 for conversion 5kg = 5000g or 5460g = 5.46kg or digits 460 seen  A1 460g or 0.46kg units needed. |
| 2 |  |  | Accept 31 to 36 | 2 | B2 for answer in range 33 – 38 inclusive  (B1 for answer in range 31 – 40 where B2 not awarded) |
| 3 |  |  | 27 | 3 | M1 for first stage or or or  M1 complete method 120 – "93" oe  A1 cao |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **5AM2F\_01** | | | | | |
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| 4 |  |  | 5, 3 | 4 | M1 finding 18 cm already used or or  M1 for finding at least a multiple of 8 cm and 14 cm or adding at least three 14’s and 6’s  M1 for finding totals and comparing with 82 or 100 if 18 totalled as well  A1 for 5 and 3  OR  M1 finding 18 cm already used, or deducting from total (eg using 82 cm)  M1 for deducting total length of 8 cm and 14 cm lengths of string from 100  M1 for finding length remaining each time , at least three deductions of 8 or 14  A1 for 5 and 3  (SC B2 only 5 or 3 on the answer line) |
| 5 |  | 4 + 3 + 3 = 10  33 + 42 + 6 = 81  81 – 60 = 21  10 + 1 = 11  or 4:33 = 273 secs  3:42 = 222 secs  3.06 = 186 secs  273 + 222 + 186=684  15:00 – 11:21  or 900–684 | 3 minutes 39 seconds | 4 | M1 for attempting to add minutes or seconds or 684 or 1081 or 1121 seen  M1 for a conversion at any stage using 60 (indep)  eg 460 + 33, or 10 minutes 81 seconds or 81 ÷ 60  M1 for attempting to subtract "total time" from  15 minutes 1500 – 1121 or 15.00 – 1081 or 900 – 684  A1 cao. |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **5AM2F\_01** | | | | | |
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| 6 | (a) |  |  | 1 | B1 for X at 0 (+5mm) |
|  | (b) |  |  | 1 | B1 for X at  within guidelines (> , <  ) |
| 7 | (a) | 8 30 + 20 | 260 | 2 | M1 for 830 + 20  A1 cao |
|  | (b) | 34 8 = 272  300 – 272  Or  348 + *b* = 300  272 + *b* = 300  *b* = 300–272 | 28 | 3 | M1 for 34 8 or 272 or forming equation  M1 dep for 300 – "272"  A1 cao  M1 300 = 34 × 8+b  M1 300 –“34×8”=b  A1 cao |
| 8 | (a) | 1.65 + 0.80 | 2.45 | 2 | M1 for 1.65 + 0.80 or digits 245 seen  A1 for 2.45 condone £2.45p |
|  | (b) | 1.40 + 1.40 + 0.75 + 0.80  = 4.35  4.35 < 5.00  or 5.00 – 4.35 =0.65  or rounded values used eg  1.50 + 1.50 + 1 + 1 = 5  All rounded up so enough money | Yes | 3 | M1 for 1.40 + 1.40 + 0.75 + 0.80 or 435 digits seen  A1 for 4.35 or digits 65  C1 (dep on M1) based on their 4.35  Or  M1 for addition of appropriately rounded prices  A1 for correct total of rounded prices.  C1 (dep on M1) Decision given – he has enough money |
| **5AM2F\_01** | | | | | |
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| 9 |  | 26 ÷ 3 = 8 2 38 remainder 2  8 90 + 238 = 796 | £7.96 or 796p | 5 | M1 for attempting to add carton prices or 26 ÷ 3  M1 26 38 or 988 seen  M1 for “8” 90 + “2”38  A1 £7.96 or 796p  C1 ft (dep on M1) “£7.96” is the least they can spend |
| 10 |  |  | (S,A) (S,C) (S,F) (A,C) (A,F) (C,F) | 2 | M1 for any 3 different combinations ignore repeats and condone one incorrect extra  A1 for all 6 (ignore repeats) |
| 11 | (a) | 12 0.45 | 5.40 | 2 | M1 for 12 45 or 12 0.45 or digits 54(0) or 5.4 seen  A1 cao |
|  | (b) | 6 ÷ 8 5 | 3.75 | 2 | M1 for 6 ÷ 8 or 6 5 or digits 375 seen or 0.75 or 30  A1 cao |
| 12 |  | *n* + *n* + 6 + *n* + *n* + 6 | *P* = 4*n* + 12 | 2 | M1 *n* + *n* + 6 + *n* + *n* + 6 or 4*n* + 12 oe or *P=*6*n±k*  A1 for *P* = 4*n* + 12 oe |
| 13 |  | 180 – 60 = 120  180 – 120 – 35 = 25  Or  60 – 35 = 25 | 25° | 3 | B1 for 60 or 120  M1 for 180 – (2 x 60) – 35  A1 for 25°  Or  B1 for 60  M1 for 180 – (180–60) –35  A1 for 25° |
| 14 |  | 200 17.5 = 3500  Or  2828 ÷ 17.5 = 161.6 | 162  Annual ticket is cheaper | 3 | M1 for 200 17.5 or 2828 ÷ 17.5 or 1616 digits seen  A1 for 3500 or 161.6 or 161 seen  C1 ft (dep M1) For conclusion that an annual ticket is cheaper. |
| **5AM2F\_01** | | | | | |
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| 15 | (a) |  | 69 | 1 | B1 for (0)69° ±2° |
|  | (b) |  | Point marked | 2 | B2 inside overlay lines  (B1 for correct bearing 125° within guidelines (± 2°)  B1 for correct length 6mm within guidelines (± 2mm)) |
| 16 | (a) |  | Correct net drawn | 3 | B3 for any correct complete net or outline of a correct net  (B2 for 4 correct adjacent rectangles or correct net wrong scale)  (B1 for one rectangle of correct dimensions but not part of a 3D diagram) |
|  | (b) | (8÷2) (20÷4) (12÷6)  or  (8÷4) (20÷2) (12÷6)  or  (8 12 20) ÷  (6 4 2) | 40 | 3 | M1 for 8 ÷ 2 or 20 ÷ 4 or 12 ÷ 6 or 8 ÷ 4 or 20 ÷ 10 or clearly marked on diagram  M1 for "4" "5" "2" or "10" "2" "2"  A1 cao  Alternative:  M1 for 8 12 20 or 6 4 2  M1 for "1920" ÷ “48”  A1 cao |
| 17 | (a) | 78 ÷ 1.5 | 52 | 2 | M1 for 78 ÷ 1.5 or 78÷1 or digits 52  A1 for 52 cao |
|  | (b) | 78 2 ÷ 40  or 80 2 ÷ 40 (estimate) | 3.9 (or 4) | 2 | M1 for 78 2 ÷ 40 or 78 ÷40×2  or 80 2 ÷ 40  A1 for 3.9 or 4  (SC B1 for 2 on answer line) |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **5AM2F\_01** | | | | | |
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| 18 | (a) | 73 + 109 + 66 = 248  360 – 248 = 112 | 112 | 2 | M1 for 360 – (73 + 109 + 66)  A1 for 112 cao |
|  | (b) | 109 + 73 ≠ 180  or 66 + 112 ≠ 180  180–109 ≠ 73  180– 73 ≠ 109  180 – 66 ≠ 112  180 – 112 ≠ 66 | No  with reasoning given | 2 | M1 for “*x*”+ 66 or 73 + 109  A1 for stating that the total of the co–interior angles is not 180  OR  M1 for stating an appropriate pair of alternate angles  71, 107, 114 or 68(ft from (a))  A1 for stating that alternate angles are not equal |
| 19 | (a) | 1 – 0.03 | 0.97 | 2 | M1 for 1 – 0.03  A1 for 0.97 oe |
|  | (b) | 0.03 1200 | 36 | 2 | M1 for 0.03 1200  A1 for 36 cao |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **5AM2F\_01** | | | | | |
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| 20 | (a)(i) |  | 32 | 2 | B1 cao |
|  | (ii) |  | 30 |  | B1 cao |
|  | (b) | 60 miles ≈ 96 km  or 100 km ≈ 62 miles | Henri  with reason give | 2 | M1 for correct conversion method or 96km or 62 miles  A1 for Henri (travels furthest) |
| 21 | (a) |  | Circle | 1 | B1 for circle drawn within guidelines |
|  | (b) |  | Triangle | 2 | M1 for constructing intersecting arcs of equal radius  A1 for a correct triangle within guidelines, with appropriate arcs  (SC B1 for a triangle drawn within guidelines if M0) |
| 22 | (a)(i) |  | 5 | 2 | B1 cao |
|  | (ii) |  | 15 |  | B1 cao |
|  | (b) |  | 4 (pm) | 1 | B1 cao |
|  | (c) | 16 + 16 | 32 | 2 | M1 for 16 seen  A1 for 32 cao |
| 23 |  |  | Correct region shaded | 3 | B1for perpendicular bisector within guidelines  B1 for arc of circle within guidelines  B1 for correct region shaded or otherwise indicated |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **5AM2F\_01** | | | | | |
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| 24 | (a) | *π* 4.52 | 63.6 | 2 | M1 for *π* 4.52  A1 for 63.5 – 63.7 |
|  | (b) | 1000 ÷ 4  1000 – 250 = 750  2  3 | 250  300  450 | 4 | M1 for 1000 ÷ 4 or 250 or 750 seen  M1 for (1000 − 250) ÷ (2 + 3) oe or  or  oe or 150 seen  M1 (dep) for ‘150’ 2 or ‘150’ 3 or  750 or  750  A1 for 250, 300 and 450 in correct places  (SC: B2 for 250, 450, 300, i.e. tulips and hyacinths transposed) |
| 25 | (a) |  | Correct elevation | 2 | B2 for correct elevation in correct orientation  (B1 for incorrect orientation) |
|  | (b) |  | Correct plan | 2 | B2 for correct plan with internal line shown  (B1 for internal line missing or for rectangle with one wrong dimension) |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **5AM2F\_01** | | | | | |
| **Question** | | **Working** | **Answer** | **Mark** | **Notes** |
| 26 | (a) | 23 50 ÷ 100 | 11.5 | 2 | M1 for 23 50 or 1150 seen or 0.23 50 or 23 0.5  A1 cao |
|  | (b) | 2.4 ÷ 50 100 | 4.8 | 2 | M1 for 2.4 ÷ 50 or 0.048 seen or 240 ÷ 50 or 2.4 ÷ 0.5  A1 cao |
| 27 |  | 30 5 - 4.9 52 | 27.5 | 2 | M1 for 30 5 and 4.9 52  or 150 and 122.5  A1 cao |

Further copies of this publication are available from

3_country_ofqual_without_curve_final

Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467

Fax 01623 450481

Email publication.orders@edexcel.com

For more information on Edexcel qualifications, please visit

www.edexcel.com/quals

Pearson Education Limited. Registered company number 872828   
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE